

ABSTRACT

Optical disk-based assay devices and methods are described, in which analyte-specific signal elements are disposed on an optical disk substrate. In preferred embodiments, the analyte-specific signal elements are disposed readably with the disk's tracking features. Also described are cleavable signal elements particularly suitable for use in the assay device and methods. Binding of the chosen analyte simultaneously to a first and a second analyte-specific side member of the cleavable signal element tethers the signal-responsive moiety to the signal element's substrate-attaching end, despite subsequent cleavage at the cleavage site that lies intermediate the first and second side members. The signal responsive moiety reflects, absorbs, or refracts incident laser light. Described are nucleic acid hybridization assays, nucleic acid sequencing, immunoassays, cell counting assays, and chemical detection. Adaptation of the assay device substrate to function as an optical waveguide permits assay geometries suitable for continuous monitoring applications.